

[0029] Having thus described the invention, it is now claimed:

I claim:

1. A lawn mowing apparatus comprising:
  - a body;
  - a drive axle;
  - a transmission operatively connected to said drive axle;
  - a shaft;
  - a cutting blade operatively connected to said shaft;
  - rotating means for rotating said shaft; and,
  - a variable speed mechanism for propelling said lawn mowing apparatus, said variable speed mechanism including:
    - A) a variable pitch pulley assembly having first and second pulley halves being positioned between said rotating means and said cutting blade, said first and second pulley halves receiving [said variable pitch pulley assembly operatively connected to] said shaft, the second pulley half being selectively moveable along the length of said shaft;
    - B) pulley connecting means for operatively connecting said variable pitch pulley assembly to said transmission, said pulley connecting means providing propulsion for said drive axle;
    - C) a control arm assembly for controlling the position of said second pulley half [variable pitch pulley assembly, said control arm assembly operatively connected to said variable pitch pulley assembly, said control arm assembly also attached to said body] said control arm assembly having a control arm positioned between said second pulley half and said cutting blade, said control arm having first and second ends and an opening that rotatable receives said shaft, said second end of said control arm being pivotably connected to said body; and,
    - D) selective adjusting means for selectively adjusting said control arm assembly, said first end of said control arm being operatively connected to said selective adjusting means, said selective adjusting means being positionable[ed] corresponding to the desired ground speed of said lawn mowing apparatus.
2. The lawn mowing apparatus of claim 1 wherein said variable pitch pulley assembly further comprises:
  - [a first pulley half;]
  - [a second pulley half, said second pulley half being selectively movable along the length of said shaft, said pulley connecting means fitting between said first and second pulley halves;]
  - a bearing, said bearing rotatably receiving said shaft, said bearing operatively associated with said second pulley half; and,
  - a bearing cup for holding said bearing, said bearing cup contacting said control arm assembly.

3. The lawn mowing apparatus of claim 2 wherein said bearing cup has first and second hooks for hooking said bearing cup to said control arm assembly.

4. The lawn mowing apparatus of claim 1 wherein said rotating means rotates the shaft at substantially one speed.

5. The lawn mowing apparatus of claim 1 wherein said control arm assembly comprises:

- a control arm having first and second ends and an opening, said second end of said control arm being pivotably connected to the body, said first end of said control arm being operatively connected to said selective adjusting means, the shaft rotatably received within said opening in said control arm.]

6. The lawn mowing apparatus of claim [5]1 wherein said control arm assembly further comprises:

- a pivot shaft, said pivot shaft being operatively connected to said first end of said control arm, said control arm pivoting about said pivot shaft; and,

- a pivot bracket, said pivot bracket being fixedly connected to the body, said pivot bracket supporting said pivot shaft.

7. The lawn mowing apparatus of claim [5]1 wherein the control arm has a first side for contacting said variable pitch pulley assembly, said first side of said control arm having a contoured surface for even wear of said variable pitch pulley assembly.

8. The lawn mowing apparatus of claim 7 wherein said control arm has a second side for contacting said variable pitch pulley assembly, said second side having a contoured surface for even wear of said variable pitch pulley assembly.

9. The lawn mowing apparatus of claim 1 wherein said selective adjusting means comprises:

- a speed selector, said speed selector for selectively adjusting said control arm assembly;

- a cable having first and second ends, said first end of said cable being operatively connected to said speed selector, said second end of said cable being operatively connected to said control arm assembly; and,

- a cable guide bracket for guiding said cable, said cable guide bracket being fixedly connected to the body, said cable guide bracket having a free rolling roller, said free rolling roller having a cable channel around the circumference, said cable received within said cable channel.

10. The lawn mowing apparatus of claim 9 wherein said cable guide bracket is positioned substantially above said control arm assembly.

11. A lawn mowing apparatus comprising:

- a body;

- a drive axle;

- a transmission operatively connected to said drive axle;

- a shaft;

- rotating means for rotating said shaft; and,

- a variable speed mechanism for propelling said lawn mowing apparatus, said variable speed mechanism including,

- A) a variable pitch pulley assembly, said variable pitch pulley assembly operatively connected to said shaft;

B) pulley connecting means for operatively connecting said variable pitch pulley assembly to said transmission, said pulley connecting means providing propulsion for said drive axle;

C) a control arm assembly for controlling said variable pitch pulley assembly, said control arm assembly operatively connected to said variable pitch pulley assembly, said control arm assembly also attached to said body, said control arm assembly including,

- (1) a control arm having first and second ends and an opening, said first end of said control arm being connected to said body, said shaft rotatably received within said opening in said control arm;
- (2) a pivot shaft, said pivot shaft being operatively connected to said first end of said control arm, said control arm pivoting about said pivot shaft;
- (3) a pivot bracket, said pivot bracket being fixedly connected to said body, said pivot bracket supporting said pivot shaft; and,
- (4) a torsion spring for biasing said control arm about said pivot shaft, said torsion spring having first and second ends, said second end of said torsion spring being operatively connected to said pivot bracket, said first end of said torsion spring being operatively connected to said control arm, said pivot shaft received within said torsion spring; and,

D) selective adjusting means for selectively adjusting said control arm assembly, said second end of said control arm being operatively connected to said selective adjusting means.

12. A control arm assembly for use with a lawn mowing apparatus having a variable speed mechanism which provides propulsion to the lawn mowing apparatus, the lawn mowing apparatus also having a body, a transmission which is operatively connected to a drive axle, a shaft, and rotating means for rotating the shaft, the variable speed mechanism having a variable pitch pulley assembly, pulley connecting means for operatively connecting the variable pitch pulley assembly to the transmission and, selective adjusting means for selectively adjusting the control arm assembly, the variable pitch pulley assembly having first and second pulley halves, the second pulley half being selectively movable along the length of the shaft, the pulley connecting means fitting between said first and second pulley halves, the control arm assembly for moving the second pulley half along the length of the shaft, the control arm assembly comprising:

a control arm having first and second ends and an opening, said second end of said control arm being pivotally connected to the body, said first end of said control arm being operatively connected to the selective adjusting means, the shaft rotatably received within said opening in said control arm.

13. The control arm assembly of claim 12 wherein the control arm assembly further comprises:

a pivot shaft, said pivot shaft being operatively connected to said second end of said control arm, said control arm pivoting about said pivot shaft; and,

a pivot bracket, said pivot bracket being fixedly connected to the body, said pivot bracket supporting said pivot shaft.

14. The control arm assembly of claim 12 wherein the control arm has a first side for contacting said variable pitch pulley assembly, said first side of said control arm having a contoured surface for even wear of said variable pitch pulley assembly.

15. The control arm assembly of claim 14 wherein said control arm has a second side for contacting said variable pitch pulley assembly, said second side having a contoured surface for even wear of said variable pitch pulley assembly.

16. A control arm assembly for use with a lawn mowing apparatus having a variable speed mechanism which provides propulsion to the lawn mowing apparatus, the lawn mowing apparatus also having a body, a transmission which is operatively connected to a drive axle, a shaft, and rotating means for rotating the shaft, the variable speed mechanism having a variable pitch pulley assembly, pulley connecting means for operatively connecting the variable pitch pulley assembly to the transmission and, selective adjusting means for selectively adjusting the control arm assembly, the variable pitch pulley assembly having first and second pulley halves, the second pulley half being selectively movable along the length of the shaft, the pulley connecting means fitting between said first and second pulley halves, the control arm assembly for moving the second pulley half along the length of the shaft, the control arm assembly comprising:

a control arm having first and second ends and an opening, said second end of said control arm being connected to the body, said first end of said control arm being operatively connected to the selective adjusting means, the shaft rotatably received within said opening in said control arm;

a pivot shaft, said pivot shaft being operatively connected to said second end of said control arm, said control arm pivoting about said pivot shaft;

a pivot bracket, said pivot bracket being fixedly connected to the body, said pivot bracket supporting said pivot shaft, and,

a torsion spring for biasing said control arm about said pivot shaft, said torsion spring having first and second ends, said second end of said torsion spring being operatively connected to said pivot bracket, said first end of said torsion spring being operatively connected to said control arm, said pivot shaft received within said torsion spring.

17. A method for selectively controlling the ground speed of a lawn mowing apparatus, the lawn mowing apparatus having a body, a transmission which is operatively connected to a drive axle, a shaft, and rotating means for rotating the shaft, the method using a variable speed mechanism, the variable speed mechanism including a variable pitch pulley assembly having first and second pulley halves and a control arm having first and second ends, the variable speed mechanism also including a pivot shaft operatively connected to the second end of the control arm, method comprising the steps of:

positioning a speed selector to a position corresponding to the desired lawn mowing apparatus ground speed;

applying tension to a cable;  
moving the first end of a control arm;  
pivoting the control arm about the pivot shaft;  
adjusting the position of a second pulley half along the length of the shaft;  
changing the effective belt diameter of a variable pitch pulley assembly; and,  
providing propulsion to the transmission.  
18. The method of claim 17 wherein the variable speed mechanism also includes a pivot shaft operatively connected

to the second end of the control arm, the method adding a step after the step of moving the first end of a control arm, the additional step being:

pivoting the control arm about the pivot shaft.]

19. The lawn mowing apparatus of claim 9 wherein said cable guide bracket is fixedly connected to said body and has a free rolling roller with a cable channel for use in guiding and receiving said cable.

20. The lawn mowing apparatus of claim 1 wherein said belt is position below said body.

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